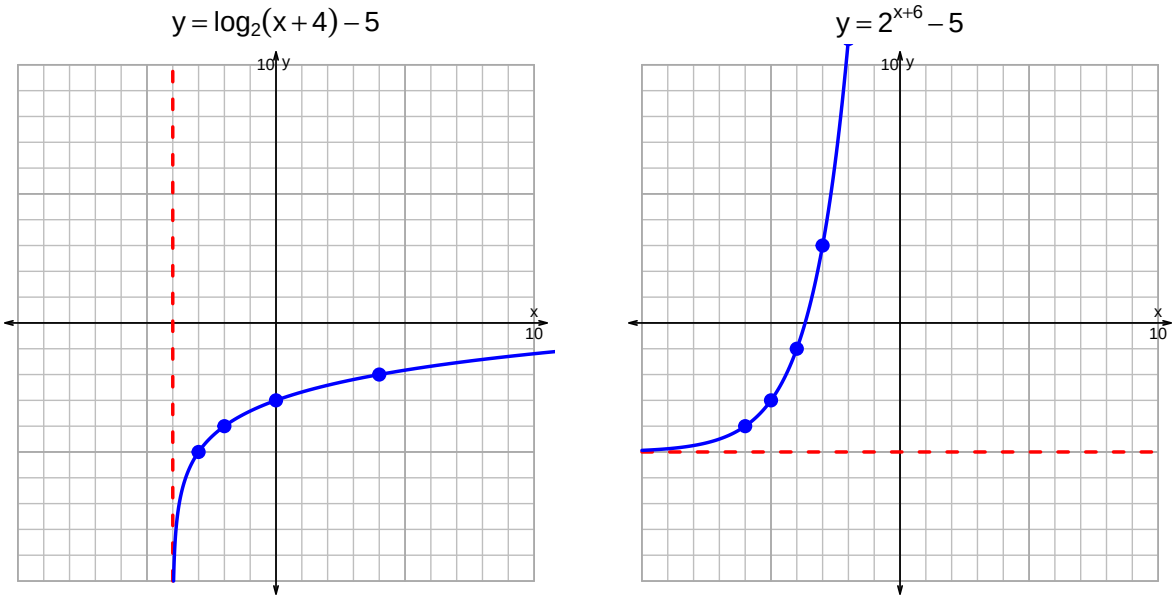
Name: Date:

S18QUIZ: EXP LOG (SLTN v211)

1. Graph $y = \log_2(x+4) - 5$ and $y = 2^{x+6} - 5$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-17 = \left(\frac{-4}{3}\right) \cdot 2^{-5t/7}$$

Divide both sides by $\frac{-4}{3}$.

$$\frac{17 \cdot 3}{4} = 2^{-5t/7}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{17 \cdot 3}{4}\right) = \frac{-5t}{7}$$

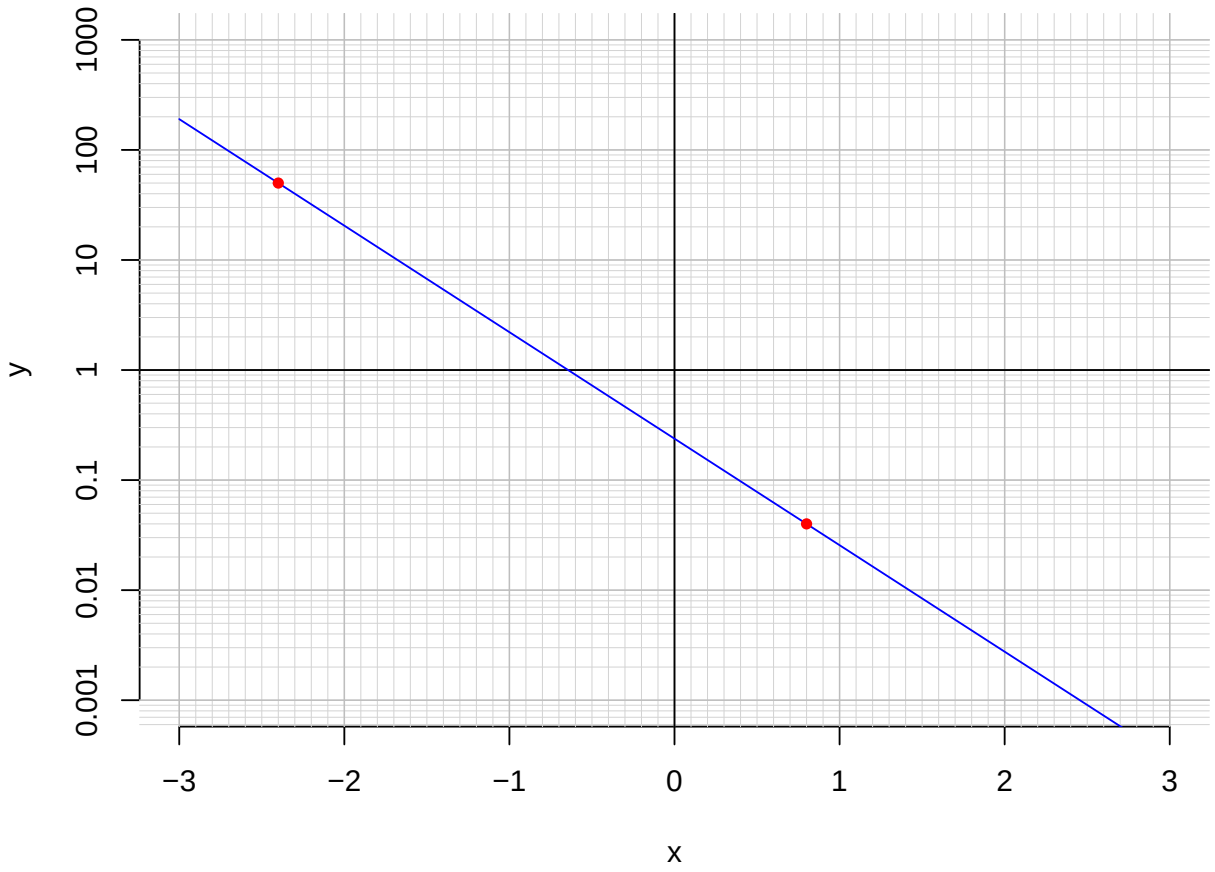
Divide both sides by $\frac{-5}{7}$.

$$\frac{-7}{5} \cdot \log_2\left(\frac{17 \cdot 3}{4}\right) = t$$

Switch sides.

$$t = \frac{-7}{5} \cdot \log_2\left(\frac{17 \cdot 3}{4}\right)$$

3. An exponential function $f(x) = 0.238 \cdot e^{-2.23x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(0.8)$.

$$f(0.8) = 0.04$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{2.23} \cdot \ln\left(\frac{x}{0.238}\right)$$

c. Using the plot above, evaluate $f^{-1}(50)$.

$$f^{-1}(50) = -2.4$$